

Remarks

It is respectfully submitted that the claims are patentable over the references of record. These references are U.S. Patent 5,632,946 (Bacon et al, hereinafter Bacon), U.S. Patent 3,936,567 (Vesely) and U.S. Patent 4,085,314 (Schultz). None of the references, either individually or in combination establish a prima facie case of obviousness. Consequently, the rejection under 35 USC § 103 cannot be sustained.

Bacon discloses a technique of making a conformable cube corner sheet. The conformable sheet of Bacon has a body portion that has facets projecting from it. This portion provides an optics layer on the sheet. The sheet of Bacon also has an adhesive layer and a carrier layer. See, for example, Figures 1, 6, 7 and 9. The optics layer of the Bacon sheet has been cut to provide separate optical segments in the body. These cuts do not extend into the adhesive layer of the sheet. Thus, they do not extend into the entirety of the Bacon sheet and therefore Bacon does not disclose a segmented reflective sheet as that term is used by Applicants.

Vesely discloses a release label. It was cited for the proposition that it shows the use of a release liner to protect an adhesive surface and does not disclose anything about reflective sheeting.

Schultz discloses an encodable reflective sheet. It was cited for the proposition that it shows the use of a slit-containing cover layer. It does not disclose anything about segmenting the reflective sheeting.

The present invention is patentable over the references of record. It is directed to segmented retroreflective sheeting in which the segments of the retroreflective sheet are discrete from one another. That is, the segments, not just the optics, are separated by a gap. Bacon does not disclose this construction. As noted above, the "segments" in Bacon are only segments of the optics layer. Moreover, Bacon discloses that the adhesive layer connects the individual segments of optics to each other. See, for example, Figures 1, 6, 7, and 9. These Figures clearly show that the adhesive layer 54 is present in the back surface of the optics layer 12, 12a or 12b. Adhesive layer 54 joins the individual segments of the optics to each other on the carrier layer. The Bacon construction is unlike the present invention. In the present invention, the individual segments of retroreflective sheeting are discrete. They are not joined together.

In view of this discussion, it is submitted that the Examiner has not sustained his burden with respect to any of the rejections of record. Accordingly, reconsideration of the application as amended is requested and allowance of all claims at an early date is solicited.

Respectfully submitted,

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Version showing all pending claims

63. A retroreflective article having a neutral axis a distance y_n from a first major surface of the final article, and adapted for attachment to a flexible substrate having an anticipated bend radius (r), the article comprising:

an elongate carrier;

a plurality of discrete segments (of length l) of retroreflective sheeting disposed on the elongate carrier; and

wherein the discrete segments are spaced apart by a distance at least $\frac{y_n}{r} \times l$.

64. A retroreflective article having an extensional stiffness, A , bending rigidity, D , and a neutral axis a distance y_n from a first major surface of the final article, and adapted for attachment to a flexible substrate having an anticipated bend radius (r), the article comprising:

an elongate carrier;

a plurality of discrete segments (of length l) of retroreflective sheeting disposed on the elongate carrier; and

wherein l is selected based upon calculating $\sqrt{\left(\frac{D}{A}\right)\left(\frac{r}{y_n}\right)}$.

66. A retroreflective article comprising:

an elongate carrier having first and second major surfaces;

a plurality of discrete segments of retroreflective sheeting disposed on the carrier wherein (a) at least some of the segments are separate from an adjacent segment by a gap, and (b) the segments of retroreflective sheeting have a first major viewing surface contacting the second major surface of the carrier, and (c) the segments of retroreflective sheeting have a second major opposing surface opposed to the first major viewing surface.

67. The retroreflective article of claim 66, wherein the second major surface of the elongate carrier is an adhesive surface.

68. The retroreflective article of claim 66, wherein the elongate carrier extends past the periphery of the discrete segments of retroreflective sheeting.
69. The article of claim 66, wherein the plurality of discrete segments form a pattern.
70. The article of claim 66, wherein the plurality of discrete segments form a letter.
71. The article of claim 66, wherein
the first major surface of the carrier comprises a release surface,
the second major opposing surface of the sheeting comprises an adhesive that is co-terminus with the boundaries of the segment, and
the article is provided in the form of a roll and the adhesive surface of the sheeting is adjacent the release surface of an adjacent layer of the roll.
72. The article of claim 66 wherein:
the first major viewing surface of the retroreflective sheeting is attached to the second major surface of the carrier with a second adhesion force,
the retroreflective sheeting provides a first adhesion force when attached to a substrate,
and
the first adhesion force is greater than the second adhesion force.
73. The article of claim 72, wherein the carrier includes a plurality of discontinuities, and wherein the carrier has strength designed to withstand the second adhesion force.
74. The retroreflective article of claim 66 wherein the second major opposing surface of the retroreflective sheeting comprises an adhesive.
75. The article of claim 66, wherein
the second major opposing surface of the retroreflective sheeting comprises an adhesive adjacent release surface,

the first major viewing surface of the retroreflective sheeting is attached to the second major surface of the carrier with a second adhesion force,

the retroreflective sheeting is attached to the release surface with a third adhesion force, and

the second adhesion force is greater than the third adhesion force.

76. The article of claim 66, wherein the carrier is extensible.

77. The article of claim 66, wherein the sheeting comprises prismatic retroreflective sheeting.

78. The article of claim 66, wherein the sheeting comprises encapsulated retroreflective sheeting.

79. The article of claim 66, wherein the edges of the sheeting are sealed.

80. The article of claim 66, wherein the article is adhered to a flexible substrate.

81. The article of claim 80, wherein the substrate is shaped as a curve.

82. The article of claim 80, wherein the substrate is shaped as a compound curve.

83. The retroreflective article of claim 80, wherein the gap is from 2 to 4 times the thickness of the substrate

84. The article of claim 66, wherein the sheeting segments are between 25 and 75 mm long and the segments are separated by a gap of at most about 40 percent of the segment length.

85. The article of claim 66, wherein the sheeting segments are between 25 and 250 mm long and the segments are separated by a gap of at most about 40 percent of the segment length.

86. The retroreflective article of claim 66, wherein the gap is at least 4 mm.

87. The article of claim 66, wherein at least some of the plurality of discrete segments have different colors.
88. The article of claim 66, and further comprising a plurality of non-retroreflective segments.
89. The article of claim 88, wherein at least some of the non-retroreflective segments are fluorescent.
90. The article of claim 66, wherein at least some of the segments are fluorescent.
91. The article of claim 66, wherein at least some of the retroreflective segments have indicia disposed relative to viewing surfaces of the segments.
92. The article of claim 66, wherein the segments are shaped identically.
93. The article of claim 66, wherein at least a plurality of the segments are identical.
94. The article of claim 66, wherein the plurality of segments forms a repeating pattern of similarly shaped segments.
95. The article of claim 66, wherein the segments are spaced from one another by a distance that is selected to inhibit wrinkling when the article is applied to a substrate and the substrate is bent around a selected radius.
96. The article of claim 66, wherein the segments are sized to inhibit wrinkling when the article is applied to a substrate and the substrate is bent around a selected radius.
97. The article of claim 66, wherein materials of the article are chosen to inhibit wrinkling when the article is applied to a substrate and the substrate is bent around a selected radius.

98. A retroreflective article, comprising:
an elongate carrier having a first major surface and a second major adhesive surface; and
a plurality of discrete segments of retroreflective sheeting disposed on the elongate carrier, the segments being spaced apart from one another to prevent contacting one another while the article is bent a predetermined amount, the discrete segments of retroreflective sheeting having (a) a first major viewing surface in contact with the second major adhesive surface of the carrier, and (b) a second major opposing surface comprising an adhesive.
99. The article of claim 98, wherein the article is adhered to a vehicle.
100. The article of claim 98, wherein the article is adhered to a traffic cone.
101. The article of claim 98, wherein the article is adhered to a traffic barrel.
102. The article of claim 98, wherein the article is adhered to a garment.
103. A retroreflective article for use on a flexible substrate, the article comprising:
a common carrier; and
a plurality of discrete retroreflective sheeting segments forming a repetitive sequential linear pattern and secured in alignment on the common carrier, wherein the common carrier is affixed to a front face of each segment, wherein the back face of each segment comprises an adhesive that is co-terminus with the boundaries of the segment.